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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,510	12/15/2000	Junius A. Kim	56316-015 (INTL-113)	9551

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EXAMINER

SEFCHECK, GREGORY B

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 04/07/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/737,510

Applicant(s)

KIM ET AL.

Examiner

Gregory B Sefcheck

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - On line 9, page 25 of the specification, "Fig. 3" should be replaced with "Fig. 4"

Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - Claims 13-15 recite the limitation "the control port" on line 1 of the claim.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 11, 12, 20, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Doucette et al. (US006108346A), hereafter Doucette.

- In regards to Claim 1, 2, 12, 20, and 21;

Doucette discloses a system and method of distributing control data through transmitting and receiving TDM data (Fig. 1 and 3; Col. 2, lines 58-64; Col. 5, lines 16-36; claim 1 – system for transmitting and receiving control data in a TDM network).

Referring to Fig. 1, Doucette shows one module 10a on the ring network contains the master control 120 for the other slave modules 10 ((Col. 6, lines 39-42; claim 1 – single master control source; claim 1 – one or more slave TDM muxes in the TDM network; claim 12 – first multiplexer acts as master station and the remaining multiplexers as slaves).

Each module includes an output port 14 for accepting control/token characters received at the input port 16 from the master source 120 and insert the control data into its subsequent transmission (Col. 6-8, lines 60-35; claim 1/20/21 – slaves include a

transmitter for accepting control data from the master source and inserting the control data into a TDM signal; claim 2 – transmitter of each slave receives control data from the associated receiver, inserts the control data into a TDM signal and transmits the TDM signal to one or more muxes).

Each module 10 is equipped to receive control data from the master source that is passed to its local processor for use in sending its packets in turn (Col. 3, lines 40-42; Col. 4, lines 20-25; Col. 6, lines 56-59; claim 1/20/21 – receiver for extracting control data in the TDM signal and passing it to a local control processor; claim 12 – slaves transmit only when stimulated by the master station, and only one station transmits at any given time; claim 20 – receive one or more control signals from master source).

Each module 10 is further equipped to immediately pass certain control characters along to the next module without local processing (Col. 6, lines 53-56; claim 1 – bridge for passing control data along to the next TDM mux independent of the local control processor).

- In regards to Claim 3,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Referring to Fig. 3, Doucette shows that the control characters 52, 53 are inserted into time slots of the transmitted signal (Col. 5, lines 21 and 56; claim 3 – transmitter inserts control data into one or more time slots of TDM signal).

Doucette shows that the input port 16 of each module 10 detects/extracts control data from the other data packets (Col. 6, lines 49-53; claim 3 – receiver extracts control data from the corresponding one or more time slots).

- In regards to Claim 11,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette shows that the transmission of data and control data between modules is performed in a half-duplex mode (Col. 3, lines 52-59; claim 11 – control data network operates in a half-duplex mode).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette.

- In regards to Claim 4,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette does not explicitly show the transmitter inserting the control data in a fraction of a time slot or the receiver extracting the control data from the corresponding fraction of that time slot.

Utilizing bandwidth efficiently is a common goal for data transmission. Control data, though necessary, utilizes bandwidth that could otherwise be used for payload data. If the needed control data is smaller in size than that of a time slot, it would be beneficial to only utilize the needed fraction of that time slot for carrying the control data, thereby freeing up the remaining fraction of that time slot for carrying payload data (claim 4 – transmitter inserts control data into a fraction of a time slot; claim 4 – receiver extracts the control signals from the corresponding fraction of the time slot).

It would have been obvious to one of ordinary skill in the art at the time of the invention to insert the control data into a fraction of a time slot, with the receiver extracting the control data from that fraction of a time slot. This would allow the remainder of the time slot to carry payload data, thereby maximizing the amount of data that can be carried in a single frame and increasing system bandwidth.

7. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Lebizay et al. (US005602841A), hereafter Lebizay.

- In regards to Claims 5 and 6,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette does not explicitly disclose the communication links of the network being T1 or E1 communication links.

Lebizay discloses point-to-point and multipoint network routing in packet switching nodes (Title). Lebizay shows that network control functions may be distributed through a control point spanning tree (Col. 8-9, lines 41-5). Lebizay further shows that networks such as T1 networks may be deployed through TDM (Col. 1, lines 49-50; claim 5 – network includes one or more T1 links). Similarly, TDM could be employed to service any such standard-type transmission medium (claim 6 – network includes one or more E1 links).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include T1, E1, or any other standard-type communication link, as shown by Lebizay, as the links of the network of Doucette. The use of these links would provide a standard transmission medium for connecting the nodes of the networks, ensuring interoperability from node to node.

8. Claims 7-10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Eidson (US006370159B1).

- In regards to Claims 7-10 and 13-15,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette does not explicitly show the network coupled to a secondary network to through an Ethernet, RS-232, or RS-485 link. Doucette also does not show communicating with the master source through Ethernet, RS-232, or RS-485 ports and protocols.

Eidson discloses a system of distributing time reference from a master node to a plurality of slave nodes. Referring to Fig. 4, Eidson shows that a the master/slave network may be coupled to secondary networks 60-62. In Fig. 7, Eidson further shows that the connections between the master, slaves, and secondary networks may be Ethernet or RS232 links, or any other such industry standard-type link (claim 7 – network is coupled to a second network via a secondary link to create a sub-network; claim 8 – secondary link includes an Ethernet link; claim 9 – secondary link includes an RS-485 link; claim 10 – secondary link includes an RS-232 link). Similarly, it would be beneficial for any communication with the master source to be over such standard-type interfaces using their standardized protocols (claim 13 – control port includes an Ethernet port for communicating with the master source via an Ethernet protocol; claim 14 – control port includes an RS-232 port for communicating with the master source via an RS-232 protocol; claim 15 – control port includes an RS-485 port for communicating with the master source via an RS-485 protocol).

It would have been obvious to one of ordinary skill in the art at the time of the invention to couple a secondary network to the network of Doucette via a secondary link such as Ethernet, RS-232, RS-485, or other such standard-type connection, as taught by Eidson. This would enable distribution of control data from the primary network to secondary network, thereby enabling synchronization between the linked networks over such interoperable links.

9. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Lang et al. (US006188699B1), hereafter Lang.

- In regards to Claims 16 and 17,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette does not explicitly show the receiver perform a serial/parallel conversion of the control data, bit shift the control data to form one or more control data octets and buffers the control data octets for use by the control processor. Doucette also does not show the transmitter buffer control data octets from the master source, perform a parallel/serial conversion of the control data, and insert the control data into predetermined data positions of the TDM signal.

Lang shows a multiplex system receives and transmits data multiplexed with control data. Referring to Figs. 6, Lang shows that data is serial-to-parallel converted at

the receiver and buffered before octets of control data are passed to Control Logic for processing. Similarly, referring to Fig. 34, Lang shows that control data is buffered and parallel-to-serial converted before being inserted into the multiplexed transmission (Fig. 1; Col. 12, lines 27-50; Col. 28, lines 11-45; claim 16 - receiver performs a serial/parallel conversion of the control data, bit shifts the control data so as to form one or more control data octets and buffers the control data octets for use by the control processor; claim 17 - transmitter buffers control data octets from the master source, performs a parallel/serial conversion of the control data, and inserts the control data into predetermined data positions of the TDM signal).

It would have been obvious to one of ordinary skill in the art at the time of the invention to handle control data in the system of Doucette by passing control data from receiver to transmitter by converting the serial control data to parallel and buffering the control data octets at the receiver, passing the control to the processor, and then buffering the parallel control data octets and converting to serial for inserting into the multiplexed transmission stream, as taught by Lang. This modification would enable the processing of data in a well-known manner at each node and ensure efficient performance of the multiplexing operation.

10. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doucette in view of Ohara et al. (US005768282A), hereafter Ohara.

- In regards to Claims 18 and 19,

Doucette discloses a system of distributing control data through transmitting and receiving TDM data that covers all limitations of the parent claim.

Doucette does not explicitly show that the network includes terminal or drop-insert multiplexers.

Ohara discloses a TDM system for distributing synchronization information from a master node to plurality of slave nodes. Referring to Fig. 6, Ohara shows nodes 10, 20, and 30 that operate as terminal and/or drop-insert multiplexors (claim 18 – network includes terminal multiplexors; claim 19 – network includes drop-insert multiplexors).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the system of Doucette to the system of terminal and drop-insert multiplexers, as shown by Ohara. This would provide the benefits of the control and data multiplexing and distribution of Doucette to the terminal and drop-insert multiplexer system of Ohara.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Doucette et al. (US006356559B1) discloses a combined synchronous and asynchronous message transmission

- Eschholz (US006278718B1) discloses a distributed network synchronization system
- Stiegler et al. (US005935214A) discloses a method for transmitting source data and control data in a communication system with a ring structure
- Narasimha et al. (US005828670A) discloses distribution of synchronization in a synchronous optical environment
- Akiyama (US005684806A) discloses a communication apparatus for TDMA system
- Amada et al. (US005241543A) discloses an independent clocking local area network and nodes used for the same
- Farleigh (US005206857A) discloses an apparatus and method for timing distribution over an asynchronous ring
- Izumi et al. (EP001041743A2) discloses a TDMA/TDD data communication system with reduction of waiting time between a standby and an active state

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 703-305-0633. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 703-305-4744. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

4-1-2004



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